

**HARVARD EDUCATION AND
RESEARCH CENTER FOR
OCCUPATIONAL SAFETY AND
HEALTH**

SUMMARY ANNUAL REPORT

July 1, 2010 – June 30, 2011

**NIOSH Training Grant
No. T42 OH 008416**

SUBMITTED BY:

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CENTER WIDE ACTIVITIES (CWA)

The Harvard ERC currently has four academic components: academic cores in Industrial Hygiene (including a track in Hazardous Substances Academic Training), Occupational and Environmental Medicine, and two special component cores in Occupational Epidemiology and Occupational Injury Prevention. Each core program offers curricula leading to either masters or doctoral degrees or both. In addition to degree programs, the Occupational and Environmental Medicine Core offers a didactic year (MPH or MPH) and a practicum year leading to board eligibility in occupational preventive medicine and is ACGME-accredited. In addition, there are active Continuing Education, Outreach, Hazardous Substances Training, and Hazardous Substance Academic Training program areas. The ERC CWA core also has an active pilot project research training program (PPRT), and ensures interdisciplinary interactions.

Dr. David Christiani is ERC director, Dr. Thomas Smith is deputy director and Pat McGaffigan is the Center's administrator. All have extensive experience in administration and training activities at the ERC and HSPH. Other academic core program directors are: Dr. Robert Herrick for Industrial Hygiene, Dr. Stefanos Kales for Occupational and Environmental Medicine, Dr. David Christiani for Occupational Epidemiology, Dr. Jack Dennerlein for Occupational Injury Prevention, Dr. Stephen Rudnick for both Hazardous Substance Academic Training and Hazardous Substances (CE) Training, Ann Backus for Outreach, and Jessica Goman for Continuing Education. Dr. Russ Hauser directs the Pilot Project Research Training Program (PPRT). Management of the Harvard ERC is the responsibility of the Executive Committee, which consists of the center director, deputy director, administrator, and directors of the academic cores and special components.

The Executive Committee (EC) meets bi-weekly. The EC also meets annually with the ERC External Advisory Board, chaired by Lou DiBernardinis, MS, CIH of MIT. Progress of the past year is presented, problems are discussed, and advice from the board is transmitted to the Executive Committee and the dean. In addition, special advisory committees meet yearly for Hazardous Substances Academic Training (HSAT) and Occupational Injury Prevention. The Occupational and Environmental Medicine Core (Residency) Advisory Committee meets twice per year, as required by the ACGME. The Occupational Health and Safety Continuing Education Advisory Committee meets quarterly.

Research training at the Harvard ERC is under the overall direction of Dr. Christiani. He is assisted by Dr. Russ Hauser, and Dr. Thomas Smith, ERC deputy director. Doctoral-level research training has expanded considerably since the last competitive application. Doctoral degrees are now offered for students in three cores/component programs in the ERC: Industrial Hygiene, Occupational Epidemiology, and Occupational Injury Prevention. There have been no changes in the ERC objectives.

INDUSTRIAL HYGIENE CORE – DR. ROBERT HERRICK

The ERC supports both professional and research training by offering a professional Master of Science in Environmental Health (concentration in Industrial Hygiene) and the Doctor of Science in Environmental Health (concentration in Industrial Hygiene) degrees.

Progress: In addition to teaching our interdisciplinary core courses, which include students from all of the programs, we also regularly serve on doctoral committees of students in environmental and occupational epidemiology, and risk assessment. Our doctoral program follows the School requirements for a set of coursework on a major (industrial hygiene) and two minors (frequently epidemiology and biostatistics). Often our doctoral students have completed an MS in IH, so they have little additional coursework to take. Two new courses have been developed: a new toxicology course designed for the occupational health students, and a new broadly integrative exposure assessment course. A new tutorial course is being offered for first year doctoral students on writing a grant proposal. This course is to guide them in the basics of writing an NIH R01 style grant application. Each doctoral student has to write a proposal that is part of their preliminary oral exam. Dr. Smith is planning a 2 year phase out to retirement in July, 2012. To ensure an orderly transition, Prof. Robert Herrick took over the IH Core as of July, 2010.

OCCUPATIONAL MEDICINE CORE – DR. STEFANOS KALES

The purposes and objectives of the OEMR are to: (1) recruit and develop a critical number of physicians with strong clinical preparation into effective preventive medicine specialists in the field of occupational medicine; (2) provide sufficient flexibility in the curriculum, after attaining basic competency, so that that physicians may gain extra emphasis in a variety of specialized areas suitable for careers in industry, government, academia, and other positions of leadership; (3) develop the next generation of teachers in occupational medicine to join the select number of junior faculty in available medical and public-health academic positions; (4) train all residents in OSH investigation. A comprehensive research experience enhances their ability to plan and conduct studies in the future, and gives them the practical knowledge to critically appraise the literature and conduct evidence-based occupational medicine; and (5) identify and cultivate a limited number of physicians with the potential to become cutting edge researchers in the field.

Progress: The ACGME re-accreditation application was fully approved for 5 years at the ACGME Board Meeting in March, 2009. Dr. Kales has instituted a Board review course for the American Board of Medical Examiners in an effort to increase our OEM residency graduate pass rate to 100%.

OCCUPATIONAL EPIDEMIOLOGY SPECIAL COMPONENT – DR. DAVID CHRISTIANI

The primary goal of the Occupational Epidemiology Special Component is to train leaders in the discipline, capable of conducting independent research on populations exposed to workplace hazards. Program objectives include: educating trainees with doctoral preparation in occupational epidemiology, providing rigorous training in general epidemiologic methods, and enabling trainees to acquire expertise in the subject area of occupational epidemiology. Education occurs at the doctoral level, with eligible research topics including the gamut of occupational disorders.

Progress: During the past year, curriculum time devoted to occupational and environmental epidemiology has increased. Moreover, an increasing number of pre-doctoral and post-doctoral applicants have identified occupational epidemiology as their focus. A number of these individuals are pursuing joint degrees in Epidemiology and Occupational Health.

OCCUPATIONAL INJURY PREVENTION – DR. JACK DENNERLEIN

Occupational injury is a large public health burden in the United States and elsewhere. The occupational injury prevention research training program offers the Doctor of Science (SD) degree in Occupational Health.

Progress: Major and recent accomplishments of the training program include: We have strengthened our existing domestic partnerships with the Center for Construction Research and Training (CPWR), University of Nebraska, Partners Health Care (Massachusetts General Hospital and Brigham and Women's Hospital), the Dana Farber Cancer Institute, Boston University School of Public Health, University of Massachusetts, the University of Washington, Beth-Israel Deaconess Orthopedics Biomechanics Laboratory, and the University of Texas, Houston. We continued a new research and training partnership with the Harvard University Construction Safety Office and through this partnership have offered a new continuing and professional education class. We renewed the collaborative relationships with the Harvard Injury Control Research Center, Massachusetts Institute of Technology and the Massachusetts State Department of Health. We also initiated a new post-doctoral training program in Occupational Safety/Injury through our partnership with the Liberty Mutual Research Institute for Safety hiring four post-doctoral fellows completing research on occupational injury related topics.

TARGETED RESEARCH TRAINING – DR. DAVID CHRISTIANI

The Education and Research Centers (ERCs) funded by the National Institute of Occupational Safety and Health (NIOSH) represent a variety of strengths and approaches required to promote high-quality research in occupational safety and health, and they are a major vehicle for the development of future leaders in occupational safety and health research. They are structured to foster development of interdisciplinary research skills needed to effectively address the priority areas of the National Occupational Research Agenda (NORA)/ Sectors and are a critical link to practicing occupational safety and health professionals and others to translate research findings into interventions that prevent illness and injury in the workplace. The Harvard ERC targeted research training program (TRT) is designed and also is intended to provide applied interdisciplinary training for a 21st-century cadre of occupational safety and health (OSH) research professionals.

Progress: For July 1, 2010 to June 30, 2011 we have enrolled 45 doctoral, masters, and OEMR students in the Center. One student was supported by TRT funds in interdisciplinary and r2p work. We are in the process of writing our competing renewal for the TRT component.

HAZARDOUS SUBSTANCE ACADEMIC TRAINING (HSAT) – DR. STEPHEN RUDNICK

The primary goal of the Harvard HSAT Program is to train competent master-of-science level industrial hygienists who are knowledgeable about the health and safety of workers involved with hazardous substances and who have the proper training to become leaders in their field. Students become well-grounded in the fundamental principles and general practices of industrial hygiene, safety, and environmental and public health, particularly as they relate to hazardous substances. Another important objective of the HSAT Program is to prepare industrial hygienists for doctoral study with emphasis on hazardous substances. A secondary goal of the HSAT Program is to make coursework available to general environmental health students that will help them to protect others from hazardous substances. Hazardous Substances Training (HST) is a component on Continuing Professional Education, directed by Dr. Rudnick and done in collaboration with the CCPE.

Progress: About 50% of HSAT graduates have continued on for a doctorate in industrial hygiene or related field. Many of them are now engaged in research and at least one is a member of the faculty of another university.

CONTINUING EDUCATION – JESSICA GOMAN

The specific objectives have not changed. During this period, the continuing education program at the Harvard Education and Research Center/Environmental and Occupational Medicine and Epidemiology Program (EOME) continues to function within Harvard School of Public Health's (HSPH) Center for Continuing Professional Education (CCPE). CCPE works closely with directors of academic cores to translate their research studies into new programs or program revitalization that meet the evolving needs of professionals in related fields. ERC faculty play an integral role in CCPE by directing program content and acting as advisors to CCPE on academic and administrative policy. To this end, CCPE has recently collaborated with faculty on three conferences and one residential intensive program.

Progress: During this award period, CE offered 60 courses. A total of 1,304 attendees participated.

PILOT PROJECT RESEARCH TRAINING – DR. RUSS HAUSER

The objective of the PPRT program is to provide support to enhance the research training capacity of the Education and Research Center (ERC) at Harvard School of Public Health (HSPH) and other occupational health and safety regional training institutions in Region I through direct support of pilot project research activities. Funds will be used to support short-term research projects to explore the feasibility of new or improved areas of study as well as to enable investigators to obtain data to successfully compete for support through conventional research funding sources. The program will continue to foster increased interdisciplinary interaction and will promote collaboration with Training Project Grant (TPG) programs and other institutions with occupational health and safety programs in Region I through the outstanding programs of our Outreach Core.

The PPRT program provided support for research conducted by student and faculty investigators from four disciplines, with topics representing at least 11 areas addressed by the National Occupational Research Agenda (NORA). Funding of the program has enhanced research training capacity in occupational health and safety by increasing the number of projects that can be supported, widening the network of involved institutions, further developing current program strengths, and adding opportunities for trainees and investigators in Region I to broaden their research horizons.

Progress: Nine projects were funded for the current award period. Past pilot projects have led to several peer reviewed publications, doctoral dissertations, and presentations at national and international conference.

Measures of Effectiveness

The following table illustrates the overall ERC performance in the areas of NORA research and professional training and outreach in Occupational Safety and Health.

Performance Measure	Target	Actual Performance
Compete successfully for NORA-relevant extramural research funds	2 project grants funded	Met (2 project grants funded)
Maintain trainee number	35 per year	45 this year
Graduate professionals in the multi-disciplinary fields of Occupational Safety and Health	At least 10 masters and doctoral graduates per year	Achieved
Increase publications in NORA-related research in peer-review journals	Minimum of 10	Exceeded target
Electronic data-base and recruitment for Harvard ERC	Develop website	Met
Maintain diversified outreach to key stakeholders	Workers, Management, Unions	Met
Increase Collaboration between Health Promotion and OH Programs	Work with Center of Excellence (Healthier Workforce) with Faculty of Society, Health and Development	Met. Dr. Dennerlein now the Co-PI with Dr. Glorian Sorenson.
Fund new round of pilot projects	At least 5 new pilots	Exceeded (9 funded).
Track ERC graduates for career progress	1) Track and document master of science students who later pursue doctoral training; 2) Institute post-graduation free e-mail access.	1) Met for those who remain at ERC. Created student database. 2) Met. Post-Harvard e-mail not available to all graduates.
Continuing Education course	Develop a new course on Health and Productivity	Done, To be offered later this year.